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# SCIENCE NEWS LETTER

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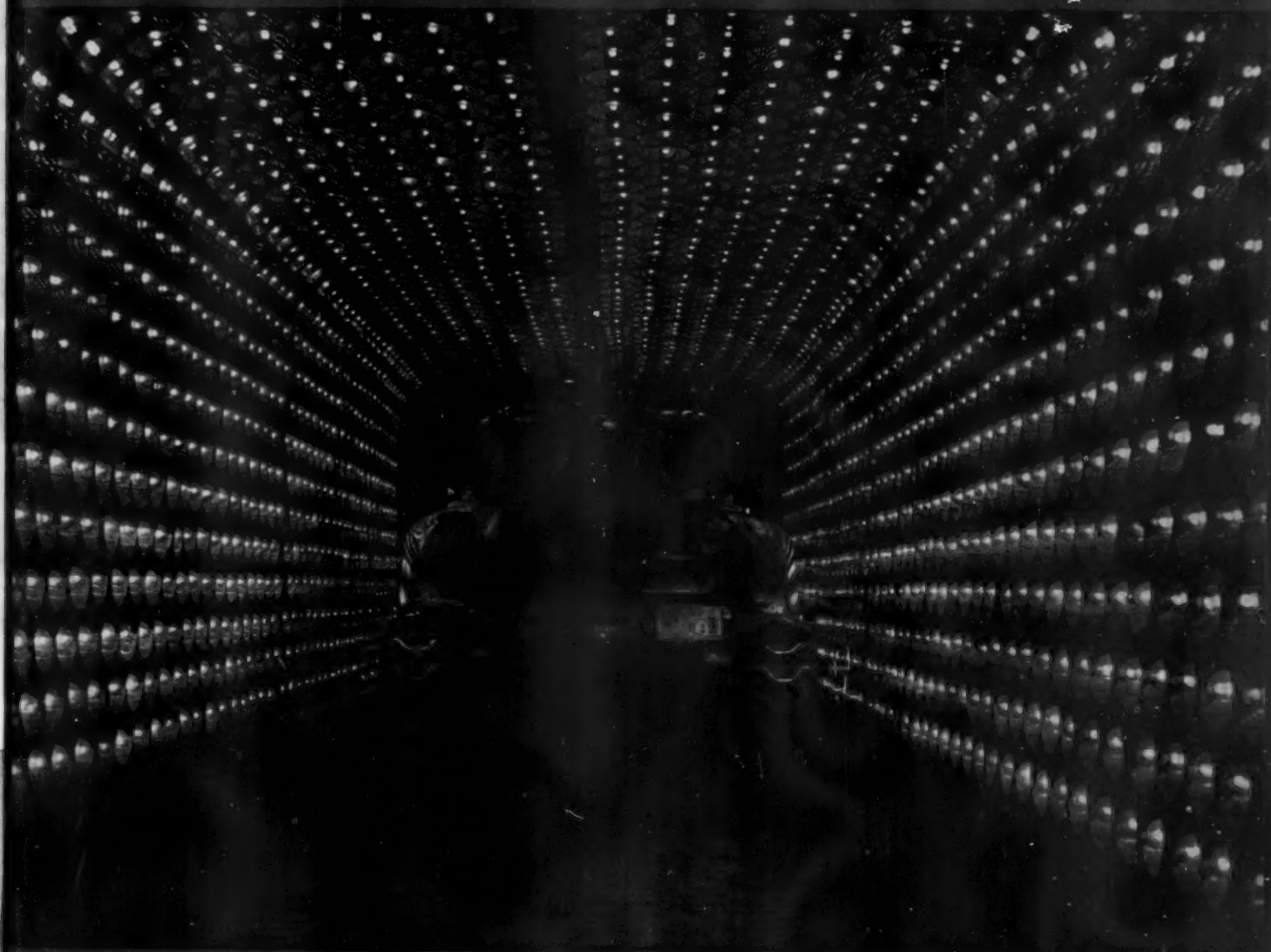

Tank Oven

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A SCIENCE SERVICE PUBLICATION

MEDICINE

# New Anti-Malarial Drug

**War Department announces that a preventive substance has been found sufficiently promising to warrant tests under field conditions.**

➤ FIRST INDICATION that the Army has a new drug for fighting malaria, and one sufficiently promising to be worthy of trial under field conditions, appears in an announcement from the War Department.

The name of the new drug has not been released, but its existence was mentioned in a report that 50 enlisted men who volunteered to expose themselves to malaria in the jungles of New Guinea have been awarded the Legion of Merit for this courageous service "beyond the call of duty."

"Simultaneously," the announcement states, "malaria tests were conducted with two other groups of soldiers.

"One of these was given atabrine as a malaria suppressive, while the second group used a drug whose efficacy has not been disclosed fully. The purpose of the triple experimentation was to obtain comparative data on the malaria cases contracted in the three groups."

The third group was not given any suppressive drug, nor were any steps taken to ward off the potentially-deadly attack of the malaria-carrying mosquitoes while the men cleared the jungle, dug ditches, built bridges and lived in a swampy cocoanut grove close to a native village where the inhabitants showed a high percentage of malaria infection.

An undisclosed number of these men got malaria for which they were given prompt treatment, but only after they became victims of the disease.

The new drug might be a brand-new chemical developed in one of the research institutions working on this problem. Promin, a relative of the sulfa drug family, was reported a year or more ago to have anti-malarial activity, but its present status has been a military secret.

Penicillin, the potent germ-killer from mold, is also said to be undergoing trial as a possible anti-malaria weapon. The recently announced fact that it can rid the human body of the spirochetes of syphilis gives support to the idea that it could have a similar action on other organisms high in the biological scale, such as the malaria parasites.

*Science News Letter, November 27, 1943*

MEDICINE

# New Blood Test

**New light on conjugal childlessness furnished by British research. Tests distinguish couples who can't hope to have more than one normal baby.**

➤ LIGHT on the tragedy of childless marriages and babies dead before they taste the first breath of life is provided by a new British research.

A method of distinguishing incompatible couples who can never hope to have more than one normal, healthy baby from others who have a somewhat better chance of having a family is reported by Drs. R. R. Race and G. L. Taylor, of the Galton Laboratory Serum Unit, Medical Research Council, in the British journal, *Nature*. (Sept. 11)

A blood factor known as the Rhesus factor, or Rh for short, because it was first discovered in the Rhesus monkey, is the cause of the tragedy. It is a harmless blood factor in itself; in fact it is contained in the blood of 85 out of every hundred persons. But if the blood containing this factor is mixed with blood not containing it, then difficulties arise.

In the tragic cases of Rh-caused stillbirth it is really the mother's own blood that kills the child. Although physicians do not understand how, there must be a little mingling of the blood of the unborn baby with that of the mother. When the baby has inherited from the father the Rh factor and the mother has non-Rh blood, then the blood of the two cannot mingle safely. If the child is the first baby and the mother has not previously had a blood transfusion with Rh blood, then the baby may come into the world alive although he is likely to have a bad case of jaundice.

By the time the second baby comes along, however, the mother has built up in her blood a resistance to the Rh factor. Now a mixing of the Rh blood with hers will probably mean death to the infant. Before the cause became known to physicians, this tragedy often developed into a double one. Since the childbirth in such cases was usually very difficult, the mother was often given a transfusion and her husband was naturally the one most likely to volunteer as donor. Typing of his blood might indicate that it was suitable, for until recently the Rh factor was not known and hence not looked for.

But the mother, already weakened by battle against the lethal factor in her baby's blood could not stand another dose of it by transfusion. She would die, killed by the blood of her loved ones.

On the average, in the United States, 13 out of every hundred marriages are between a father with Rh blood and a mother who has no Rh. Some of these marriages are doomed to childlessness or a series of tragedies—miscarriages and stillbirths. But others, although likely to suffer from some such incidents, still have a fair chance of producing healthy children.

When the father with Rh blood is the child of parents both of whom had Rh blood, then the marriage has a poor chance of being blessed with more than one child. If, however, the father with Rh blood has inherited the non-Rh gene, there is a fifty-fifty chance that any child of his will be free from the Rh factor, so that this will not be a barrier to safe birth. Such husbands with combined inheritance—heterozygotes, as they are known scientifically—can be found by the new British test; 60% of Rh husbands on the average are of this type.

*Science News Letter, November 27, 1943*

CHEMISTRY

## Perkin Medal Awarded For Applied Chemistry

➤ THE PERKIN MEDAL will be presented to Gaston F. DuBois, vice-president of the Monsanto Chemical Company, St. Louis, by the American Section of the Society of Chemical Industry on Jan. 7 in recognition of his contributions to applied chemistry.

*Science News Letter, November 27, 1943*

GENERAL SCIENCE

# Science Will Need Support

**Financial backing for basic research in "pure" science is seen as a critical post-war problem. Finding competent leaders for research important.**

➤ RESEARCH in industry will not have any particular difficulty in finding support after the war, for its value has been thoroughly demonstrated. Basic research in "pure" science, without which progress in applied science soon bogs down, presents more critical problems, Prof. Hugh S. Taylor of Princeton University declared before the autumn meeting of the American Philosophical Society in Philadelphia.

Support from private sources is most desirable, in the opinion of Prof. Taylor. State support, he said, brings with it "the dangers of bureaucratic and political control, the problem of justification for support sought.

"The autonomy of science," he continued, "even in countries where science is free, is constantly endangered by such state support. To guard that autonomy in the new order of scientific research, to assure wise allocation of available funds to integrate research in physical science with the social and humanistic aspects of progress are the increasing responsibilities of the scientific and cultural foundations of the country."

Leadership for the new research will also present serious problems, the speaker pointed out: "The problem of direction of research is essentially one of finding research directors, experienced in the performance of research themselves and with breadth of training; but also with extraordinary qualities of leadership and inspiration, integrity and a selfless wisdom which draws from the research staff its maximum potentialities. The availability of competent directors will determine the success of the research institutes. The supply is low but the war effort may result in the discovery of enough for the immediate post-war era."

*Science News Letter, November 27, 1943*

## Earth Radiations Ionize

➤ RADIATIONS from the earth put electrical charges on about as many particles in the air as do cosmic rays, tests in the vicinity of New York convinced Prof. Victor F. Hess of Fordham University, Nobel Prizeman in physics in 1936. Professor Hess tested the ionization (electrical charging) of the air with an instrument devised in the laboratories of the Carnegie Institution of Washington, exposing it over both water and grass-covered soil. Variations of ionization over land were twice as great as those over water.

*Science News Letter, November 27, 1943*

## Salvaging "Lost" Cells

➤ HOW RED blood cells that have got "lost" into the body tissue spaces through injury to blood vessels are salvaged and put back into circulation was described by Prof. Carl Caskey Speidel of the University of Virginia, who also showed speeded-up micro-motion pictures of the process.

Salvage is accomplished by the lymph vessels, the thin-walled "second circulatory system" of the body, that normally bring back fluids and certain non-blood materials from the tissues and return them to the veins. To salvage "lost" blood cells, a lymph vessel grows a sprout toward the stranded cell; its tip encircles the cell and takes it in.

If a "lost" red blood cell is not thus rescued within two days it apparently counts as a "dead one" and is pounced upon and gobbled up by the white corpuscles that act as the body's scavengers.

*Science News Letter, November 27, 1943*

## Condor Teaches Soaring

➤ LESSONS in efficient soaring technique, which may benefit future generations of aviators, were learned from the world's largest flying birds, the nearly extinct California condors, by John H. Storer of Waltham, Mass., one of the most active of American ornithologists, and passed on to his fellow-scientists at the autumn meeting of the American Philosophical Society.

Two types of wing-tip have been developed by soaring birds, Mr. Storer stated. One is pointed, and has reached a highly advanced stage in such birds as albatross and gull. The other presents a slotted surface to the up-currents, giving highly sensitive control, especially in strong but very localized currents such as are found in the mountains. The con-

***INSTRUCTOR IN SOARING—The bird shown in flight in this California condor group, at the Field Museum of Natural History, illustrates the wings' tremendous spread and slotted surface tips. Scientists are learning principles of soaring to apply to aircraft from this bird, probably the world's most highly developed soaring bird.***

dor, probably the world's most highly developed soaring bird, has the largest slots.

Mr. Storer showed slow-motion pictures of California condors taking off and in flight, showing in detail how they use their feather control surfaces. He also stated that he is at present carrying on wind-tunnel experiments with models based on these pictures.

*Science News Letter, November 27, 1943*

## "Impossible" Hybrids

➤ REARING "impossible" hybrid plants on a synthetic diet including powdered malt extract was reported by Dr. Albert F. Blakeslee of Smith College. When some plant species are crossed, an embryo plant will start to develop but will soon die, producing a sterile seed, because conditions within the parent plant are not favorable to its continued growth. By very carefully dissecting out these microscopic beginnings of the new plants and transferring them to a glass dish containing the necessary nutrient elements, the otherwise doomed embryos could be induced to grow.

Dr. Blakeslee and his associate in this research, Dr. Sophie Satin, used various kinds of hybrid jimsonweeds in their experiments; but the principles involved apply to other plants, to obtain desirable hybrids which have heretofore been regarded as impossible.

*Science News Letter, November 27, 1943*

MEDICINE

# Jaundice Has Sequel

### Group of officers and enlisted men are suffering from a psychoneurotic condition following 1942 epidemic. Exhaustion, indigestion and instability are symptoms.

➤ SINCE the epidemic of jaundice in the U. S. armed forces in 1942, (*See SNL*, Aug. 8, 1942) a "sizable group of officers and enlisted men" have, apparently as a sequel to the disease, been suffering from a psychoneurotic condition, Maj. C. M. Caravati, chief of medical service of Percy Jones General Hospital, told members of the Southern Medical Association at the meeting in Cincinnati.

Chronic and unexplained exhaustion, a mild but constant aching under the ribs on the right side, digestive disturbances especially after eating fats, loss of weight and emotional instability are the outstanding symptoms of the condition, Major Caravati reported.

Most of the patients complained of these symptoms before they had recovered from the jaundice, but others apparently recover before the condition he reported sets in.

Thorough, careful examination of the patients failed to show any evidence of disease of the liver or any other organ.

The disturbance, Major Caravati believes should be considered as a change of physiology caused by an unfavorable reaction to a mild infection. Or it may have been caused by long confinement by illness which made the patients feel frustrated and depressed and even convinced some that they would be permanently disabled. Such injury to the emotional and mental make-up may have been sufficient to upset normal functioning of the body.

*Science News Letter, November 27, 1943*

## Marihuana Won't Help

➤ HOPE that marihuana, often blamed for crime and insanity among its users who smoked it in "reefers" or "goof-butts," might help cure morphine addicts by relieving the withdrawal symptoms when they are taken off the narcotic drug proves false in the light of studies reported by Dr. C. K. Himmelsbach at the meeting of the Southern Medical Association. Dr. Himmelsbach is director of research at the Lexington, Ky., U. S. Public Health Service Hospital where alcohol and narcotic drug addicts are treated.

In the studies, "Pyrahexyl" compound, a synthetic drug reported to have considerable activity like that of marihuana or cannabis, was given by mouth and by injection into the muscles to bona fide morphine addicts in place of morphine. Even in amounts sufficient to produce marihuana effects, the compound did not appreciably relieve the morphine withdrawal symptoms.

*Science News Letter, November 27, 1943*

## Blood Plasma Development

➤ THE DEVELOPMENT of blood plasma and the extended use of blood and blood substitutes for treatment of shock in battle injuries rank in importance with the development of the liver treatment for pernicious anemia and insulin for diabetes, Comdr. Edward L. Bortz, of the Philadelphia Naval Hospital, declared at the meeting of the Southern Medical Association.

He listed the following as a few of the achievements of wartime medicine: plasma, chemotherapy, transport of the wounded, prophylaxis, balanced nutrition, new blood fractions, sea water made into drinking water and anesthesia.

The new blood fractions are serum albumin, serum globulin and serum fibrinogen which Dr. Edwin J. Cohn, of

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Harvard Medical School, has separated from whole blood. These give promise of effective uses, Commander Bortz stated. Serum albumin is being used now in concentrated form for treating shock, which he characterized as the "most serious battle emergency."

*Science News Letter, November 27, 1943*

## Research Medal Awarded

➤ CONTINUING to search for the cause and methods of treating nutritional deficiency diseases "is a practical matter having dollars and cents value to every citizen," Dr. Tom D. Spies, of the University of Cincinnati Medical College and Hillman Hospital, Birmingham, Ala., declared in accepting the association's research medal.

"The number of malnourished persons, the great expense involved in caring for them, and the cost in loss of manpower leave no doubt," he continued, "of the imperative need for uninterrupted scientific research in the field of nutrition."

*Science News Letter, November 27, 1943*

CHEMISTRY

# Salt Taken from Water

**Navy approves new de-salting chemical that quickly makes sea water drinkable. Briquets of chemical are the size of a candy bar.**

➤ A NEW chemical that takes the deadly salt out of sea water in 20 minutes and permits a flier to carry the makings of a 14-day supply of life-sustaining drinking water in his rubber life-raft has been recommended by the Naval Medical Research Institute, and is already in production, climaxing more than a year of all-out research in which innumerable de-salting devices have been invented and demonstrated.

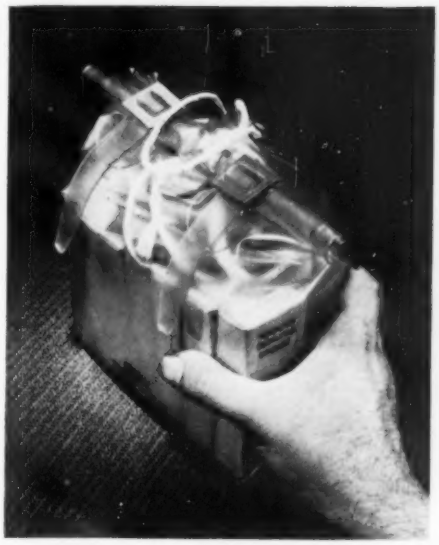
***LIFESAVER—This briquet is a secret chemical to take the salt out of sea water so that it can be used for drinking. The chemical was developed by the Permutit Company. It is wrapped with cardboard, foil and pliofilm to prevent damage from salt air, and water in case of submersion.***

The new chemical de-salter, which weighs only 3½ pounds and converts more than 14 pints of sea water into drinking water, was designed to prevent death from thirst and tissue dehydration among fliers drifting on rubber life-rafts.

At least a dozen methods of distilling or chemically de-salting sea water for fliers have been tested by Naval Medical Research Institute chemists and physicians but were rejected because of awkwardness, poor yield, excess weight or harmful reactions. A small can is the only water supply which downed fliers have been taking aboard rafts.

The new chemical, which is carried in the form of briquets the size of a small candy bar, is the result of many months of research on the part of the Permutit Company of New York. When dropped into a plastic bag filled with sea water, the chemical quickly absorbs the dissolved salts, permitting them to be filtered out as the flier sucks the water through a plastic tube. Each briquet weighs only one-sixth as much as the drinking water it produces and takes up only one-tenth as much space, thus keeping within all-important plane-loading limits.

As a result of original tests made by the Navy Department and later corroborated by the American Airlines, officials of the American Airlines announced that they had adopted this sea water de-salting process for all over-water cargo and passenger flights and had recommended it to other airlines operating flights under the Air Transport Command.



***JUST A HANDFUL—Packed in this water-tight plastic container the desalting materials weigh only 3½ pounds. The kit is rolled into the deflated life-raft pack during over-sea flights.***

At a "shipwreck demonstration" in the Atlantic Ocean off Long Island, sea water was scooped up in the transparent bag and a briquet was dropped in. The bag was sealed and shaken and the chemical absorbed. Salts were retained by a cloth filter as the water was sucked out.

Chemical methods of converting sea water to drinkable water have been sought by scientists for centuries. Since man first went to sea thousands of shipwrecked sailors and airmen have died from thirst and many thousands of others have lost their reason.

Attention has been focused on the problem of water-supply for life-rafts by the vast amount of over-water flying and fighting, especially in the Pacific war zones where two- and three-week raft "squattings" have become commonplace. The Rickenbacker and Doxon-Aldrich-Pastula sagas, describing the tortures of thirst aboard life rafts, showed that lucky catches of fish, birds and rain-water were all that prevented their deaths from thirst. Medical opinion holds that water is more important than food in sustaining life, for dehydration of tissues is usually fatal.

*Science News Letter, November 27, 1943*

MILITARY SCIENCE

# Navy Growing Fast

**Increase in the U. S. fleet since Pearl Harbor is impressive, says "Jane's Fighting Ships." Gun-power of new battleships is terrific.**

➤ THE IMPRESSIVE growth of the U. S. Navy since Pearl Harbor is strikingly shown in the 1943 American edition of *Jane's Fighting Ships,* standard British reference work, newly issued in this country. (*Macmillan*)

Topping the list are eight massive battleships and 11 new fleet plane carriers, with a dozen or more additional carriers on the way. At the "little end" are veritable swarms of the craft that make U-boats submerge—permanently: 200 destroyer escorts, 600 sub-chasers. Along with them are listed 200 of another kind of aquatic wasps—motor torpedo boats.

The list of fleet plane carriers does not include the numerous "aircraft escort vessels" created by the conversion of uncompleted 17,600-ton merchant ships, which have done much to win the Battle of the Atlantic from the U-boat packs. Thirteen of these are listed by name, besides "others of which names have not been reported."

*Jane's* lists all six of the battleships of the 35,000-ton North Carolina class as now in service, together with two of the later 45,000-tonners, the Iowa and the New Jersey. These eight new ships pack more power in their 72 main-battery guns than the ten battleships of Japan's pre-war navy had in the 94 heavy-caliber guns they mounted. A little rapid pencil-and-paper work indicates that the American array of new 16-inch weapons can throw more than one and one-half million pounds of steel at one discharge; the combined batteries of the Jap ships, consisting principally of 14-inch guns, fire a total broadside only a little over one and one-third million pounds. Or in terms of destructive power loosed per broadside, the American guns develop somewhat more than eight million foot-tons, as against only seven million for their Jap opposites.

The section on war losses shows some impressive box scores against the enemy. *Jane's* credits American fighting ships with the destruction of two battleships of the Kongo class off Guadalcanal, but does not admit as substantiated the Army's claim to the destruction of the Haruna in the first days of the Philippine fighting. Jap carriers sunk are listed as five certain and two "possibles." Between 30 and 35 cruisers, and 70 and 75 destroyers, are set down as the Allied toll of the Japanese lighter ships, though with the cautionary note that in these categories accurate tallies are difficult to make under battle conditions.

Among the photographs of warships customary in naval publications there is one of rather unconventional type. It is the only known photograph of the Japanese carrier Syokaku, and was supplied by the U. S. Navy. It shows the big craft staggering through a giant geyser of spray and smoke thrown up by a big bomb that scored a near-miss.

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***WINGED CARGO—Here is an interior view of one of the new "cargo-liners" with which United Airlines recently inaugurated a coast-to-coast all-cargo schedule for essential wartime mail and express. The Douglas DC-3 planes, stripped of passenger furnishings, carry three tons of freight, as compared with the average 1,400 pounds transported aboard one of the regular passenger planes.***

PUBLIC HEALTH

## Drinking Water Should Be Kept Pure to Avoid Typhoid

➤ A GENERATION ago, fall was the big typhoid fever season. Today typhoid fever cases are rare, due chiefly to the fact that water supplies in our cities and towns are carefully protected from pollution. In small towns and on farms, most families have their own water supply, and must be careful of it or the family, and the neighbors too, will be in danger of typhoid and of other diseases spread by polluted water, such as dysentery.

If you have always lived on the farm and had a good well, you are probably proud of its cold, clear water and sure that it is safe. You may even boast that no one ever got sick from drinking water from your well. Remember, however, that the walls of the well may crack, and if they do, polluted water, perhaps from the privy, can seep in. The U. S. Public Health Service calls attention to this danger in a new pamphlet on safe water.

Play safe by having your health department inspect the well from time to time. The wall of a cistern should be inspected every time the cistern is cleaned, the health service advises.

City people who have moved to the

country or to a house just outside town and its water supply are especially likely to be ignorant of the dangers of unsafe water supplies. Polluted water can look safe, smell safe and taste delicious and yet be as dangerous as a drink of poison. Just because the water bubbles from a spring or runs in a fairly swift current down the stream does not mean that it is safe.

Water can be made safe by boiling but many people do not like the taste of boiled water. Boiling the family water supply is something of a nuisance and there is always the danger that someone will carelessly or ignorantly drink the unboiled water. So, if you have your own family water supply, consult your health department and follows its advice.

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PUBLIC HEALTH

# Public Needs Protection

**Public Health Service expert urges that new textiles should not be put on the market until they are tested for skin irritating properties.**

➤ WORKERS with textiles and the public using textiles should be protected from finishes which irritate the skin, Dr. Louis Schwartz, chief of the Dermatosis Investigations Section of the U. S. Public Health Service urged at the National Safety Congress meeting in Chicago.

Protection can be given the worker by mechanical devices, machines designed to keep the worker away from the chemical being applied, or impervious protective clothing, Dr. Schwartz pointed out.

The public which will use these textiles should be protected by having the new finishes tested for their skin-irritating properties before they are put on the market.

Several outbreaks of dermatitis have developed since the war began among workers sewing on a material on which water-proof finish was being used. In other instances workers sewing heavy water-proof duck developed dermatitis because the duck was finished without final washing and drying.

We now have crease-proof finishes, run-proof finishes, fire-proof finishes, mildew-proof finishes and a number of others, the speaker pointed out. "The chemicals used for these finishes all have possibilities of causing dermatitis," Dr. Schwartz said.

The finish should be first tested on animals to determine if it is a primary skin irritant and thus avoid its use on fabrics coming in contact with the skin, he explained. If it passes this test successfully, patch tests should be performed with the finished fabrics on a number of individuals to find out how many cases of dermatitis develop. The same subjects would be re-tested ten days later to determine the skin sensitizing properties of the finish.

The safety record of men with serious physical handicaps is above average, Dr. H. A. Vonachen, medical director of the Caterpillar Tractor Company, told members of the Congress. They make good workers, and absenteeism is low. A survey has been conducted by the Caterpillar Tractor Company to find the jobs that the physically handicapped are capable of performing, so that men returning from service with handicaps may be employed immediately.

*Science News Letter, November 27, 1943*

MEDICINE

# Red Blood Cells Heal

**Infected wounds and unhealed amputation stumps are successfully treated with powder salvaged from plasma production.**

➤ SUCCESSFUL use of a blood powder from red blood cells, salvaged from plasma production, in speeding wound healing is reported by Dr. T. H. Seldon and Dr. H. H. Young of the Mayo Clinic.

The red blood cell powder is either dusted on the wound or applied with a sterile spatula. One or two applications are made daily and the wound covered after each with a dry, sterile dressing.

A five-inch-wide varicose ulcer, which almost encircled a patient's leg and had been present for eight years in spite of treatment by the usual accepted methods, was almost completely healed in eight weeks by daily application of the red blood cell powder.

The blood powder has also given good results in a number of wounds following surgical removal of pilonidal cysts and fistulas. Infected wounds, amputation stumps that were not healing, and open chest wounds are among other types treated.

The results are not uniformly beneficial. In three cases the powder caused such severe, irritating, burning pain that it had to be discontinued. The Mayo Clinic doctors believe, however, that further study of the use of the red blood cell powder is warranted. The possibility of using red cells from other than human blood, such as beef blood, so as to have a supply when the source of human blood cells drops off after the war, should also, they suggest, be investigated.

The use in wound treatment of red blood cells salvaged from plasma production was first suggested and tried by Dr. J. J. Moorhead and Dr. L. J. Unger, of New York City. These doctors used the cells in the form of a gelatin-like mass. Difficulty in keeping this semi-liquid material from being absorbed by the dressing or running out of the wound led to development, by Dr. A. E. Osterberg of the Mayo Clinic, of the red blood cell powder.

*Science News Letter, November 27, 1943*

INDUSTRY

## Franklin Institute Awards Medal for Management

➤ THE VERMILYE MEDAL was awarded at the Franklin Institute to the president of the world's largest telephone system. "In recognition of outstanding contribution in the field of industrial management," the award was given to Walter S. Gifford, president of the American Telephone and Telegraph Company.

The medal was awarded by William M. Vermilye, vice-president of the National City Bank of New York. Lewis H. Brown, president of Johns-Manville Corporation, was its first recipient in 1939.

*Science News Letter, November 27, 1943*

ASTROPHYSICS

## Solar Gas and Radiation May Determine Weather

➤ CLOSE agreement between the observations of the abundance of clouds of calcium gas on the sun and Smithsonian Institution measurements of daily variations in solar radiation has lent new support to the theory that day-to-day weather changes can be predicted from solar observations.

Dr. Charles G. Abbot, secretary of the Smithsonian Institution, reported to the American Astronomical Society meeting in Cincinnati that a tentative trial of solar forecasting of temperature changes at Washington was carried on for 201 days. The results agreed about 60% of the time, which is better than can be ascribed to chance alone.

The observations of calcium clouds were made by the monks at Ebro, Spain, independently of Dr. Abbot's work, and he used their work combined with his own as a basis for the weather forecasting. He stated that weather changes connected with a solar change of activity start about three days before and last for 14 days after such a change.

Referring to the longer and better known solar cycle of 23 years, Dr. Abbot predicted that repetitions of past great droughts in the Northwest will occur about 1975 and again about 2020.

*Science News Letter, November 27, 1943*

ANTHROPOLOGY

## Songs Replace Jails For South Sea "Criminals"

➤ YOU don't go to jail for wrong-doing in the South Sea Islands—you get a song written about you, telling the world of your disgrace.

Describing the use of Polynesian music at a meeting of the Anthropological Society of Washington, Dr. Edwin G. Burrows of the University of Connecticut gave some examples of the native custom of singing about sinners. Songs were composed mocking the mother of an illegitimate child; disgracing two overambitious chiefs who tried to monopolize the single money-making occupation of one of the islands, the copra trade; denouncing those who would not become Christians.

Guardhouses and jails are American culture elements introduced into the islands that have become military bases, Dr. Burrows explained. But while our men behind bars may sing about "having wings like an angel" the native offenders, free as the air, squirm at the sound of a song.

Other forms of punishment described by Dr. Burrows consisted of fining a male offender a pig and a female lawbreaker a mat or some barkcloth.

Everybody sings Polynesian music. Soloists don't get a chance. With the usual crowded living conditions and lack of privacy on the islands due to wallless huts clustered in the heart of the village, a love serenade, if attempted, would develop into a community sing.

Native babies don't get rocked to sleep, Dr. Burrows continued. And native mothers don't know any lullabies. They just place the tots on a fiber mat, and the youngsters fall asleep anyhow.

The Polynesians have adopted our scale of music, making their music an interesting blend of two cultures. With so many of our troops stationed on the islands, it is a toss-up as to how music will be affected. Whether it would mean Polynesian classics or more of American tom-tom rhythm, Dr. Burrows could not predict.

*Science News Letter, November 27, 1943*

ASTRONOMY

## Star Speeding From Sun At Half Million M.P.H.

➤ A STAR moving away from the sun as a speed of 155 miles per second (250 kilometers per second) has been found by Dr. Frank K. Edmondson, of Kirkwood Observatory, University of Indiana. This is a speed of over a half million miles per hour.

This star is one of the smaller stars of the universe, of the spectral type called K, which makes it smaller and redder than the sun.

In reporting his find to the American Astronomical Society meeting in Cincinnati, Dr. Edmondson stated that his discovery was made in the course of an investigation of the motions of certain selected stars fainter than the tenth magnitude. His work indicates that the small K stars have a wider range in velocity than expected. To account for this, we must suppose that there are a large number of such so-called dwarfs, compared to the giant stars. Previously, the percentage of dwarfs had been supposed to be about 20% or 30%, but the new results indicate that it may be as high as 80%.

Only about half a dozen stars are known with velocities exceeding 155 miles per second (250 kilometers per second).

*Science News Letter, November 27, 1943*

# IN SCIEN

INVENTION

## Fluorescent Upholstery For Movie Theaters

➤ PROBABLY everyone has had the embarrassing experience of unexpectedly sitting on a stranger's lap in the dark. You go into a darkened motion picture theater, grope your way to what your sun-blinded vision mistakes for a vacant seat—only to find it already occupied. A method aiming at the avoidance of such contretemps has been invented by James H. Owens of Camden, N. J. He makes a bold extension of previous proposals to give movie patrons greater confidence in moving down a dark aisle by causing the carpet pattern to give off a fluorescent glow under the irradiation of small, hooded ultraviolet lamps. His system involves the flooding of the entire theater with ultraviolet radiation at low intensity, and the use of fluorescent materials on the seat upholstery as well as on the floor covering. Empty seats would then announce their presence by a gentle glow; a dark space would mean an occupied seat.

An incidental benefit suggested by Mr. Owens would be an ultraviolet suntan bath while you watched your favorite film star. This would be especially the case, he points out, at seaside resorts where patrons often attend in bathing suits or playsuits.

Rights in the patent, No. 2,334,351, are assigned to the Radio Corporation of America.

*Science News Letter, November 27, 1943*

INVENTION

## "Juke-Box" Invented For Motion Pictures

➤ ONE INVENTION which will be hailed by the younger generation, though perhaps not by some of their elders, is in effect a juke-box for "talkies." It adds to the selectable battery of phonograph records that supply the customary nickel's worth of music a corresponding and synchronized group of motion picture films, together with a framed projection screen on top of the apparatus. Patent No. 2,334,547 has been issued to Dwain A. Esper of La Crescenta, Calif., on this device.

*Science News Letter, November 27, 1943*

# E FIELDS

NUTRITION

## Diet May Banish Need For Eyeglasses in Future

➤ A WORLD of the future in which no one will need to wear eyeglasses because the mothers of the race will eat a superior diet was predicted by Dr. Russell M. Wilder, of the Mayo Clinic, at the wartime conference on nutrition held in Chicago by the Institute of Medicine of Chicago.

Application to human diets of existing knowledge of nutrition, beginning early in childhood and continuing through life, may reasonably be expected, he said, to delay the development of presbyopia, the kind of farsightedness that comes in middle life or old age, and even prevent development of cataract.

"It may even be supposed," he continued, "that astigmatism, longsightedness and shortsightedness will be found to be preventable" by suitable nourishment of the mother during the development of the eye of the unborn child.

"In that case wearing glasses may become outmoded," he declared.

Nightblindness and certain other eye diseases are known to be caused by faulty diet. The eye, Dr. Wilder pointed out, like other organs of the body, is probably affected by diet in still other ways and like the rest of the body is affected by the changes accompanying the process of growing old. Nutritional scientists are finding that in rats, which are much like humans with respect to nutrition and eating, the growing-old process can be greatly delayed by proper diet. Changes in the eyes due to the aging process might similarly be prevented.

The eyes may even help doctors find more ways for postponing aging and preventing not merely disease but poor health, Dr. Wilder suggested, because the eyes can be examined internally and externally during life.

*Science News Letter, November 27, 1943*

ASTRONOMY

## Cincinnati Observatory Gets New Director

➤ DR. PAUL HERGET, formerly assistant professor of astronomy at the University of Cincinnati, has been appointed director of the 100-year-old Cincinnati Observatory (*See SNL*, Oct. 30) to succeed the late Dr. Elliott Smith. He is also elevated to the post of professor and head of the University of Cincinnati department of astronomy.

Dr. Herget, an expert in celestial mechanics, is now on war leave of absence at the United States Naval Observatory, Washington, D. C. When his work there is concluded, probably in three or four months he will take up his new duties in Cincinnati. Meanwhile Dr. Everett I. Yowell, professor emeritus of astronomy, will continue as acting director. Dr. Herget becomes the seventh director of the observatory since its founding.

Born in Cincinnati, Jan. 30, 1908, Dr. Herget attended the city's public schools and the University, receiving his doctorate in 1935. Most of his research interests have been in the computation of the orbits of the minor planets and comets. He has completed the determination of the orbits of the tenth and eleventh satellites of Jupiter, recently discovered by Dr. Seth B. Nicholson, who used the 100-inch Mt. Wilson telescope.

*Science News Letter, November 27, 1943*

CHEMISTRY

## Resin-Forming Chemicals Increase Hardness of Wood

➤ RESIN-FORMING chemicals forced into wood change the characteristics of the wood, giving it wearing strength, hardness and resistance to warping and swelling. Wood treated by this new process has many war uses and will probably replace metals for certain uses after the war.

In the treatment, the wood is impregnated with a newly developed chemical compound which reacts with the wood cellulose, producing resin within the wood. When sufficiently treated, the wood is dimensionally stable under varying moisture conditions, does not show grain raising, has increased compressive strength as well as higher strength in tension across the grain, and can be highly polished.

Another recent development in wood technology permits the wood to be bent readily into various shapes. The process consists of soaking green wood in a water solution of urea and heating it to near the boiling point. The wood becomes plastic and can be bent easily as desired. On cooling, it regains its original rigidity and retains the shape given it while hot.

*Science News Letter, November 27, 1943*

ZOOLOGY

## Monkey Mother Cleared Of Kidnaping Charge

➤ A FIVE-YEAR-OLD kidnaping charge against a female rhesus monkey has been at least partially cleared by the birth to the monkey of a two-headed monster, reported by Dr. Carl G. Hartman, of the University of Illinois. (*Science*, Nov. 19)

The charge was brought by Dr. Hartman in 1938, when the monkey mother, acquired by the Carnegie Institution Laboratory of Embryology in Baltimore as No. 636, arrived in New York Harbor in possession of three babies. These were labeled triplets by New York newspapers.

One of these baby monkeys did belong to No. 636. Its birth was witnessed. Two other female monkeys in the same cage with her, however, were found by Dr. Hartman to show signs of having recently given birth to offspring. He concluded, therefore, that one and probably two of the so-called triplets were not the actual offspring of No. 636 but had been kidnaped by her.

When a year later she gave birth to the two-headed monster he decided that this abortive attempt at twinning might be ground for crediting 636 with having had at least twins, though not triplets, the preceding year.

"The data, however, are too uncertain," he warns, "to be used to bolster the much discredited theory of the hereditary tendency to produce duplicate twins."

No. 636, incidentally, has since furnished a normal 35-day-old embryo.

*Science News Letter, November 27, 1943*

ENGINEERING

## Infra-Red Rays Dry Tanks As They Drive Through Oven

**See Front Cover**

➤ FOR PROTECTION against the elements, U. S. tanks are painted before shipment overseas at the Chester Tank Depot of the Army Ordnance Department. Ordinarily, it would take 24 hours for the paint to dry; but, using the method shown in the official Signal Corps photograph on the cover of this SCIENCE NEWS LETTER, the tank is dried by infra-red rays in only four minutes. The drying process is of such short duration that the operator driving the tank through the "oven" does not have to leave his position in the driver's seat.

*Science News Letter, November 27, 1943*

ASTRONOMY

# Jupiter Shines in East

**Joins Mars and Saturn and bright December stars, making evening sky a brilliant display. Saturn's rings now at angle to the earth.**

By JAMES STOKLEY

➤ WHEN DECEMBER evenings arrive, we begin to see the brilliant stellar display of winter, for then the part of the sky that is visible before we go to bed includes more of the brightest stars than any other region. And this month their glory is enhanced by the addition of three planets, each one of which is nearly at its maximum brightness. On the accompanying maps these stars and planets are indicated as they are arranged at about 11:00 p.m. at the beginning of December, or about 10:00 p.m. in the middle of the month.

To the east, especially the southeast, is the best collection of shining orbs. The brightest object is the red planet Mars, now but a little more than 50,000,000 miles away, which is closer than it will be for some years to come. It stands in the constellation of Taurus, the bull, in which you can see the star Aldebaran, supposed to be the bull's eye. Also in Taurus, fainter than Mars, but considerably more brilliant than Aldebaran, is the planet Saturn.

Below Taurus is the splendid constellation of Orion, representing a warrior with upraised club which he uses to threaten the charging bull. Three stars in a nearly vertical row form his belt. Just to the north is Betelgeuse, in one of his shoulders, while to the south is Rigel, in his lifted foot. And below Orion is Canis Major, the great dog. The conspicuous star in this figure is Sirius, known also as the dog star. This is of interest because it is the brightest star in the whole night sky. Its magnitude, in the astronomer's scale, is minus 1.6, just slightly fainter than Mars is at present.

### One of Closest Stars

Also it is one of the closest stars that we can see from the northern hemisphere, which is the reason for its brilliance. Its distance is 51,087,200,000,000 miles. But that is rather an awkward figure to handle, so its distance is often expressed as 8.7 light years, a light year (about 6,000,000,000,000 miles) being the distance that a beam of light will travel in a year.

To the left of Canis Major is the lesser dog, Canis Minor, with another bright star, called Procyon. And to the left of this group, and a little higher, are Gemini, the twins, whose names are Castor and Pollux. Directly below Gemini is the faint group of Cancer, the crab, no stars of which are shown on the maps, and below that is Leo, the lion, which rises into good view just after the times for which the maps are drawn. Jupiter, our third bright planet, is entering into this part of the sky, and just manages to get on the maps, close to the horizon. Though just now it is really brighter than Mars, it will not seem so when it is so low, because the earth's atmosphere absorbs much of the light. Later in the night, as it rises higher, it will be seen in greater splendor. This month it is close to the star Regulus.

### Mercury Appears Briefly

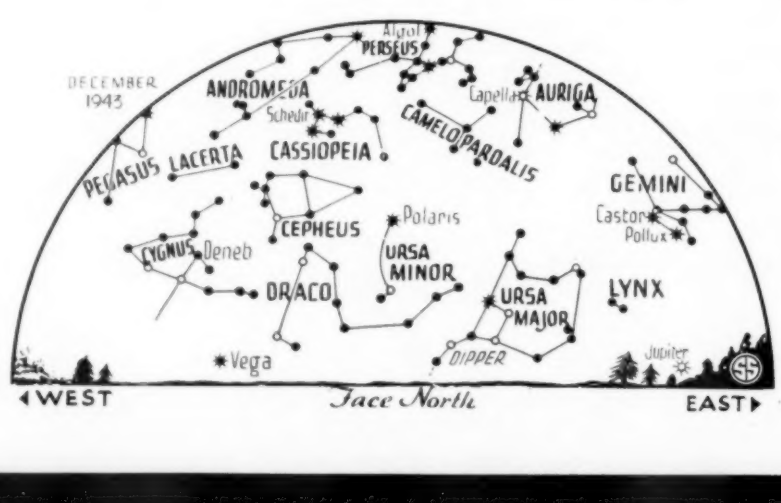
As for the other two naked eye planets this month, Mercury also puts in a brief appearance around the 22nd. On that date, which also happens to be that of the beginning of winter, Mercury is farthest east of the sun. It will set in the west about an hour and twenty minutes after the sun, so it may be glimpsed with difficulty in the twilight. Venus rises in the east about 4:00 a.m. In the constellation of Libra, the scales, it is so brilliant, exceeding even Mars or Jupiter by about 6 1/3 times, that one would have no trouble in locating it.

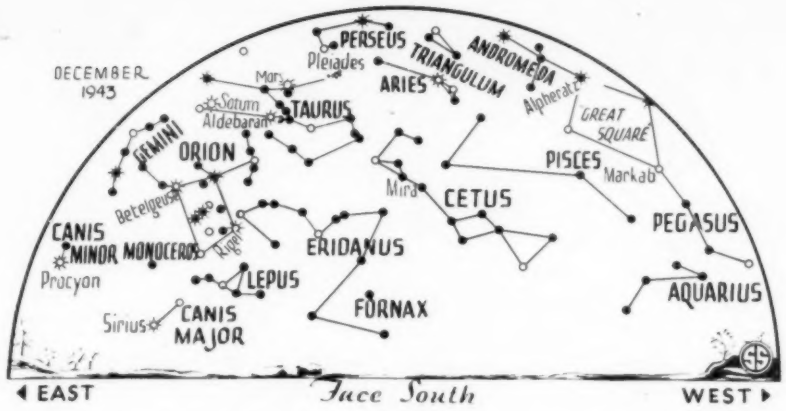
Shown nearly overhead on the December maps is the constellation of Perseus, and in it is a star named Algol. This is from an Arabic word, "al ghul," which means "the demon," and if you look at this star on the evenings of Dec. 13 or 16 you may understand why it was given this unsavory title. On most nights when you look at it, you will find it considerably brighter than the star just to the south of it—rho Persei. But if you look at it on Dec. 13, about 11:10 p.m., EWT, or on the 16th about 7:59 p.m., EWT, you will find that it is approximately the same as rho Persei in magnitude.

### Brightness Wanes

Astronomers have long studied it, and they find that normally its magnitude is 2.2. For about 2 days 11 hours the star remains close to its normal state. Then, in about 5 hours, it drops to a third of its usual brightness; in another 5 hours it gradually resumes it again. As long ago as 1782 an English astronomer named Goodricke proposed that the star consisted of a bright and a faint member, revolving around each other so that every few days the dark body partially eclipsed the bright one. No telescope is powerful enough to show these two bodies, but it has been amply proved that this idea is correct. In fact, there is even a third body whose presence has been detected.

Modern researches, some of which have used an electric eye for accurate measurement of the brightness, have indicated that there is a slight diminution in brilliance as the bright star passes in front of the darker one, and this shows that the latter is not entirely dark. The bright star is about 27 times as big as our sun and the companion is still






☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

bigger, though only about a fifteenth as bright. The distance between the centers of the two stars is about 13,000,000 miles and the distance of the pair from us is approximately 125 light years. Several hundred of these eclipsing binary stars are known. Their periods vary upward from a few hours, where the two spheres are almost in contact. Others take several months for the change, and one, epsilon Aurigae, is eclipsed every 27 years, the reduction in light lasting for two years. Saturn, which is now so bright in the constellation of Taurus, is always a most interesting object through a telescope big enough to reveal its curious system of rings. Actually this is not a solid ring —many years ago it was shown that no solid ring, even if made of the strongest materials conceivable, would be able to withstand the strains to which it would be subjected. Instead, it is made up of a swarm of tiny moons, perhaps no larger than good-sized rocks on earth. There are so many millions and millions of them that from this distance they look continuous. The ring system is about 41,500 miles wide and 171,000 miles in outside diameter, while there is a space of 7,000 miles between the inner part and the surface of Saturn. The system is only about ten miles thick. In July, 1936, when the earth was exactly in the plane of the rings, they disappeared from view, even through big telescopes.

But since then they have been opening out, as the earth has moved farther and farther away from their plane. This month they are spread out the most, and there is an angle of nearly 27 degrees between their plane and the line to us. In 1951 they will again be on edge, and after that the other side will be presented to our view. The complete cycle takes 29 1/2 years, which is the time it takes Saturn to revolve around the sun.

### CELESTIAL TIME TABLE
**December, 1943**

| Dec. | EWT | |
|---|---|---|
| 1 | 6:00 a. m. | Moon nearest, distance 228,-600 miles |
| 4 | 7:03 a. m. | Moon in first quarter. |
| 5 | 2:00 p. m. | Earth directly between sun and Mars. |
| 8 | 5:32 a. m. | Algol at minimum. |
| 10 | 7:43 p. m. | Moon passes Mars. |
| 11 | 2:21 a. m. | Algol at minimum. |
| | 12:24 p. m. | Full moon. |
| | 9:07 p. m. | Moon passes Saturn. |
| 12 | early a. m. | Meteors of Geminid shower. |
| 13 | 11:10 p. m. | Algol at minimum. |
| 15 | 8:00 p. m. | Saturn nearest, distance 748,-000,000 miles. |
| 16 | 7:59 p. m. | Algol at minimum. |
| 17 | 2:44 a. m. | Moon passes Jupiter. |
| | 3:00 a. m. | Moon farthest, distance 251,-600 miles. |
| 19 | 4:03 p. m. | Moon at last quarter. |
| | 4:48 p. m. | Algol at minumum |
| 22 | 1:30 p. m. | Winter solstice, winter commences. |
| | 10:00 p. m. | Mercury farthest east of sun. |
| 23 | 2:46 p. m. | Moon passes Venus. |
| 26 | 11:50 p. m. | New moon. |
| 28 | 10:00 p. m. | Moon nearest, distance 225,-100 miles. |
| 31 | 4:05 a. m. | Algol at minimum. |

Subtract one hour for CWT, two hours for MWT, and three for PWT.

*Science News Letter, November 27, 1943*

MEDICINE

## Safer Gold Salts Found For Treating Arthritis

➤ DISCOVERIES that may lead to greater safety in the use of gold salts for treating arthritis and some other diseases are announced by Dr. A. K. Anderson and Dr. Charles W. Denko of Pennsylvania State College.

New, non-poisonous gold compounds, called auroxanthates, have been developed by these scientists. The auroxanthates when injected into rats build up the resistance of the animals to later injections of the toxic gold compounds. Whether the auroxanthates themselves have curative properties has not yet been determined.

The second discovery is that before the rats die from the effects of the toxic compounds, their blood gives a danger warning by an increase in non-protein nitrogen content even when no visible damage to the kidneys can be detected.

*Science News Letter, November 27, 1943*

MEDICINE

## Scientists Asked Who Should Get Mayer Award

➤ SCIENTISTS are being asked to recommend persons who may be eligible for the 1943 Charles L. Mayer award of $2,000.

The award is offered for the most outstanding contribution made during 1943 to present-day knowledge of factors affecting the growth of animal cells, with particular reference to human cancer. The National Science Fund of the National Academy of Sciences administers the award.

Manuscripts and articles published during 1943 may be submitted to the committee any time before the middle of January, 1944.

Last year's award, the first to be given, was made to Dr. Charles Huggins of the University of Chicago for his work on endocrine control of prostatic cancer.

*Science News Letter, November 27, 1943*

**SCIENCE SUBJECTS Gain NEW Interest**

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SVE 2" x 2" COLOR SLIDES

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# Do You Know?

Approximately 350 *cigarettes* are made from a pound of tobacco leaf.

The Michigan *crayfish,* a pre-war bait or bathing beach pest, now is used as food.

*Podubiche,* a wild plant in Bulgaria, is said to be valuable in treating malaria and dysentery.

*Nicotinic acid,* which can be prepared by oxidizing nicotine, is used in the treatment of pellagra.

Low-grade *tobacco* may become an important source of wax, stains, fat suitable for soap making, tobacco-seed oil, nicotine and wallboard.

Through the watchfulness of Audubon Society wardens, *egrets* of Florida's Everglades have been brought back to nearly their former abundance.

*Acrylic acid* is the basis of a transparent plastic used in warplane noses and turrets; known for a century, it has had no commercial use until recently.

*Plastic pellets* and compressed air are used in army training instead of bullets and gunpowder to save expenses; the gun in size, action and appearance is much the same as the Browning machine gun.

New flotation *chemicals* are assisting to produce copper, zinc, lead, nickel, chromium, tungsten and other metals from low-grade ores formerly discarded; flotation agents mixed in a water bath with powdered ores raise the metal particles to the surface.

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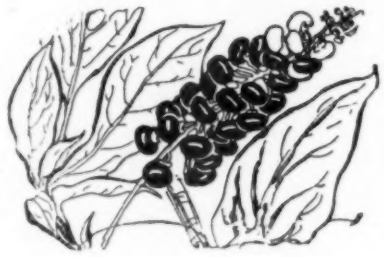
BOTANY

## NATURE RAMBLINGS by Frank Thone



### Wayside Resources

➤ SEVERAL manuals have come out lately, telling men in the armed forces how to live off the country if they are lost in the jungle or cast ashore on a desert island. Ability to recognize good food plants and knowledge of how to prepare them may, under such circumstances, mean the difference between death and survival.

Those of us who remain behind to hold the home front are not confronted with anything like so severe an emergency. Nevertheless, what with increasingly strict rationing of many kinds of food, and total disappearance of some kinds from the market for weeks on end, a revival of the wild-food lore our pioneer forebears knew might be a highly useful thing.

A comprehensive round-up of tested information about edible wild plants is supplied by a new book, *Edible Wild Plants of Eastern North America,* issued as a special publication of the Gray Herbarium and published by the Idlewild Press at Cornwall-on-Hudson. It is the joint work of a botanist and a zoologist: Prof. M. L. Fernald of Harvard University and Prof. A. C. Kinsey of Indiana University. They list a most astonishing number of wild food plants that can be had "for free," requiring neither cash nor coupons.

Next to the obvious, ready-to-eat things like wild plums, red-haws and many kinds of berries, one would perhaps most quickly think of succulent leaves and stems that can be eaten fresh as vegetables or cooked up into a tasty mess of greens. In these classes, some species have already found enough favor that one occasionally meets them in the market: pokeweed, for example, and dandelion, and chicory. We might be less likely to think of pigweed, purslane, marsh-marigold and spring-beauty in this connection, but they are said to be good eating, too.

But there are more filling foods in the list, especially in the calorie-supplying carbohydrate classification. Besides the highly nutritious nuts (some of which supply oil as well) we are offered arrowhead tubers, wild rice, water chinquapin, Jerusalem artichoke, wild salsify and dozens of others.

In all, the authors present no less than 14 different categories of wild plant foods, ranging literally from soup to nuts.

One of the things that strikes a more or less town-bound botanist on glancing over this book is the fact that you don't have to go out into the wilderness, like John the Baptist, to find these neglected but often appetizing wild food plants. Most of them grow within the easy range of a suburban ramble, and many of them crowd up abundantly as common wayside weeds.

*Science News Letter, November 27, 1943*

ENGINEERING

## Instrument Perfected To Measure Engine Leakage

➤ A NEW instrument to be used in testing the efficiency of diesel and other internal combustion engines by measuring gas leakages from the cylinders was described at the National Fuels and Lubricants meeting of the Society of Automotive Engineers in Tulsa. The instrument continuously and automatically records the leakage, or "blow-by," of the hot gases and the charging air which may escape past the piston rings in the engine cylinder.

The blow-by recorder consists of a standard household gas meter to which the new instrument, a recording unit, is attached. A revolving pointer on the unit passes through a trough of mercury once on each revolution, establishing an electric circuit which passes to the recorder itself.

Blow-by gases cause abnormal piston ring and cylinder wear. The hot gases, resulting from the ignition of the fuel charge, press downward on the piston head and the compression ring. If they pass the ring they destroy the film of oil on the cylinder wall, causing wear and burning.

The instrument was developed by R. R. Proctor, A. J. Stock, and D. J. Wangelin of the Pure Oil Company.

*Science News Letter, November 27, 1943*

# Who

## is the most unusual person on your Christmas Gift list?

**Wouldn't he (or she) like a gift of twelve packages, one to arrive each month in 1944?**

In each package (a box or bulky envelope) there will be one or more objects of science, and with each object, a museum-style legend card, which will tell at a glance what these things of science are. Included will be the sheets of explanation, that give the interesting detail of discovery, of development, of manufacture, and that tell frequently how to perform interesting experiments with the contents of the package.

Since late in 1940, packages like these have been going forward to members of the *THINGS of science* group. The last three packages listed below, starting with "Prince Rupert's Drops" close the year 1943. Glance over this list, then decide whether a membership which brings monthly packages on subjects as widely varied as these, isn't just the thing for that most unusual person on your Christmas Gift list.

Optics
Plastics
Bread Vitamins
Bi-Metallic
Whey Candy
Plant Hormones
Insects
Paper Packaging
Mineral Optics
Fern Fossils
Sulfur
Oyster
Fiberglas
Salt
Casein
Oil Seeds
Coins
Rayon
Cork
Synthetic Rubber
Strategic Minerals
Fingerprinting
New Fabrics
Meteorite
Fossils
Fire Psychology
Indicator
Seeds of Medicinal and Condiment Plants
Unusual Fabrics
Treated Wood and Cloth
Buoyant
Transparent Packaging
Plywood
Lodestone
Prince Rupert's Drops
Unusual Paper and Sheeting
Blind Flying Equipment

The gift of a Membership to receive *THINGS of science* is no ordinary gift. It is a gift for someone who has imagination, who cares and dares to look ahead, who wants not only to read, but to see, handle, and talk about objects of science.

The 1944 *THINGS of science* will be unusual; every month's package will be a surprise. A Christmas Membership to *THINGS of science* will bring the 12 units of 1944, plus the December 1943 unit which we will add to your gift with our compliments, to arrive in time for Christmas. We will inscribe and mail a Christmas card with your name as donor, announcing your gift. Each Membership is $4 a year, postpaid. You will find a handy order coupon below.

You know one or more who would thank you again and again for such a gift. If you are not yourself a member, you could hint to someone that you'd like it as a gift yourself.

O-826

## Gift from

MY NAME_____

STREET ADDRESS_____

CITY & STATE_____
(Postal Zone)

Mail this order to THINGS of science, 1719 N St., N.W., Washington 6, D. C.

☐ I enclose $4.00 for the following
☐ Please bill me after Christmas

## Gift to

_____
PLEASE PRINT

STREET ADDRESS_____

CITY & STATE_____
(Postal Zone if known)

MAKE OUT Christmas Card
TO READ from_____

MEDICINE

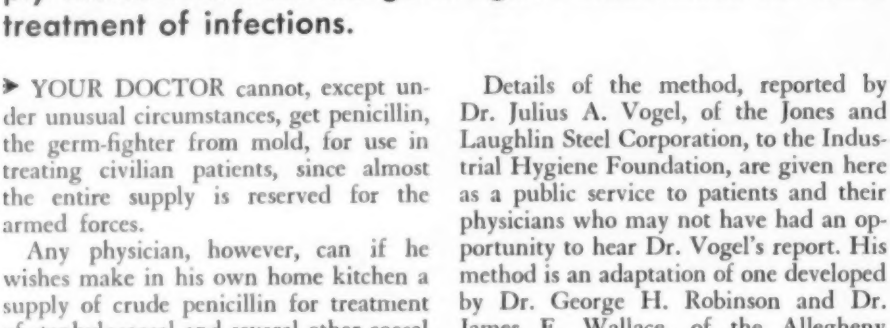
# Penicillin For All

**Physicians can, by following simple directions, supply themselves with the germ-fighter from mold for local treatment of infections.**

➤ YOUR DOCTOR cannot, except under unusual circumstances, get penicillin, the germ-fighter from mold, for use in treating civilian patients, since almost the entire supply is reserved for the armed forces.

Any physician, however, can if he wishes make in his own home kitchen a supply of crude penicillin for treatment of staphylococcal and several other coccal infections in or near the surface of the skin.

Details of the method, reported by Dr. Julius A. Vogel, of the Jones and Laughlin Steel Corporation, to the Industrial Hygiene Foundation, are given here as a public service to patients and their physicians who may not have had an opportunity to hear Dr. Vogel's report. His method is an adaptation of one developed by Dr. George H. Robinson and Dr. James E. Wallace, of the Allegheny General Hospital, Pittsburgh. (*See SNL*, Oct. 23)



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## What's the word you think most of at Christmas?

THERE'S one word men of good will everywhere associate with Christmas.

That word is *"Peace. Peace on earth"...*

There can be no peace this Christmas. Not one of us would want the only kind of peace there could be, an inconclusive peace.

*But we do want the right kind of peace as soon as possible. And this Christmas we can help hasten the coming of that wonderful day, by making War Bonds our chief gift.*

Every Bond you buy brightens the chances of a better world than man has ever known.

How, then, could you possibly give a better present than Bonds, Bonds, Bonds? Give them to each member of the family. Give them to your friends. Give them to *everybody*.

**Give War Bonds for Christmas**


"The 150-millimeter Pyrex petrie dishes are first washed in soap and water, rinsed and dried," Dr. Vogel directs. "Then 28 x 24 mesh absorbent gauze is folded into eight thicknesses. Circular patches of this folded gauze the size of the base of the petrie dish then are cut out and placed in the dish and covered with the lid.

"The entire petrie dish containing the gauze is then placed into the bake oven for one-half hour at a thermostat temperature of 400 degrees Fahrenheit. If the accuracy of the thermostat is doubted, a safe method is to apply heat until the gauze begins to show a slight tinting of scorch.

"They are then removed from the oven and allowed to cool. Using a glass marking pencil, the date of culturing them is written on the top of the glass so that successive cultures cannot be confused with one another.

"To conserve time the culture medium is prepared and a one pint bottle and its screw cap are sterilized by boiling in water for 20 minutes while the petrie dishes are sterilizing in the oven.

"One pint of distilled water is placed in the base of a glass coffee pot and to it is added dehydrated yeast, drams one and one-half, and glycerine, drams three. Then a separate mixture of dextrose, drams three; cornstarch, drams three; and cold distilled water, one ounce, are thoroughly mixed in a tea cup. This is then added to the contents of the glass coffee maker, stirred well and boiled for 20 minutes over a low flame.

"At the end of this time the bottle and screw cap are removed from the boiling water, making certain not to contaminate the lip of the bottle or the inner side of the screw cap. The boiling solution is immediately poured into the bottle and sufficient boiling distilled water is added to fill it. The cap is applied and it is shaken well to produce a homogeneous mixture.

### Wipe Off Bottle Neck

"When the petrie dishes and the culture medium have cooled sufficiently, the neck of the bottle is wiped off with a gauze sponge saturated with 70% alcohol. In a few minutes the alcohol has evaporated from the surface and two ounces of medium is poured into each petrie dish, raising one side of the lid of the petrie dish sufficiently to admit the mouth of the bottle, while at the same time being careful not to touch the petrie dish with it.

"A flamed platinum loop is then touched to the stock culture (of the mold,

*Penicillium notatum*), which can be obtained from any reputable bacteriologist or medical school, and transferred to the plate by stroking the loop across the medium several times. The dish is then turned one-fourth of a circle and the plate stroked again with another loopful of culture.

"The cultured dishes are then placed in a safe place at room temperature. Optimum temperature for the growth of the mold is 72 to 74 degrees Fahrenheit.

"The first growth of the mold is evidenced in 24 hours by the appearance of numerous 'snail tracks' on the surface of the medium. Soon the entire surface becomes pure white with mycelial growth. In several hours the growth changes in color into a light dusty green which soon deepens into a dark green and finally, if allowed to grow long enough, becomes almost black.

### Globules Appear

"At about the age of five days, small yellow-hued globules appear on the surface of the mold. This is pure crude penicillin and has an inhibitory titre to staphylococci in dilution of one to 20,000.

"The penicillin which is secreted during the growth processes of the mold is mainly deposited on the under surface of the gauze and is of an unmistakable deep yellow color. The formation of penicillin reaches its maximum in 12 days, then rapidly retrogresses during the next two days. Hence the penicillin gauze is used when it is from four to 12 days old, the lower figure being the earliest age at which sufficient penicillin has been secreted to be effective.

"In use, a section sufficiently large to cover the infected area is cut from the penicillin gauze with sterile scissors and applied yellow side next to the wound. This is then covered with a single thickness of 28 x 24 gauze cut slightly larger than the patch and bound down securely along the edges with adhesive."

Periodic preparation of the penicillin gauze is necessary in order to have it on hand at the proper stage of mold growth when it is needed, Dr. Vogel points out. He also warns that the penicillin is in the crude state and present in such small quantity that it cannot be refined and used intravenously for a septicemia or pneumonia or for any infection that is not in or near the surface of the skin.

*Science News Letter, November 27, 1943*

Modern *ball-bearings,* probably, most nearly approach the perfect sphere; they are usually made to tolerances of 1/100,000 inch.

# • Books of the Week •

➤ CHEMISTRY has been popularized over and over since Slosson's resoundingly successful pioneer work, *Creative Chemistry.* THE CHEMICAL FRONT, by Williams Haynes, has the freshness of a new approach: it looks at the manifold role of chemistry in war, and in the world that is to follow the war, ranging through such diverse subjects as explosives and poison gases, sulfa drugs and atabrine, synthetics and light metals. The color-photo illustrations are striking. (*Knopf,* $3)

*Science News Letter, November 27, 1943*

➤ HISTORICAL BOTANY, presented in a delightfully fresh and discursive style, with pictures to match, constitutes the matter of FIRST THE FLOWER, THEN THE FRUIT, by Jannette May Lucas. (*Lippincott,* $2) Since all the plants discussed are pleasant to the tongue or the nose or the eye (or all three), interest in this book is decidedly not limited to botanists.

*Science News Letter, November 27, 1943*

➤ ALASKA has been brought nearer to the rest of the United States by recent events; we have become more interested in the land and its inhabitants. One of the most interesting of these, the Alaska brown bear, is presented for younger readers by Harold McCracken in THE BIGGEST BEAR ON EARTH, a fictionalized account with many good pictures. (*Stokes,* $2)

*Science News Letter, November 27, 1943*

## • Just Off Press •

HOW TO TREAT THE GERMANS—Emil Ludwig—*Willard,* 96 p., $1., paper. The well-known biographer presents a character portrayal of the German people which he believes will contribute to the making of a more lasting peace.

INSTRUCTION BOOK FOR GOVERNMENT UTILITY GAS PRODUCER—Ministry of War Transport—*British Information Services,* 32 p., illus., 45 c., paper.

AN INTRODUCTION TO THE CERAMICS OF TRES ZAPOTES VERACRUZ, MEXICO—C. W. Weiant—*Gov't. Printing Office,* 220 p., illus., 40c., paper.

THE 1943-44 FARMER'S TAX MANUAL—William C. Clay, Jr.—*Doubleday, Doran,* 72 p., illus., $1., paper.

OUR ARMY TODAY — Kendall Banning — *Funk & Wagnalls,* 259 p., illus., $2.50.

THE PSYCHOLOGY OF JUNG—Jolan Jacobi, translated by K. W. Bash—*Yale,* 166 p., illus., $2.50. Foreword by Dr. Jung.

ROAD TO PEACE AND FREEDOM—Irving Brant—*Bobbs, Merrill,* 278 p., $2.

SCIENCE AT WAR — George W. Gray — *Harper,* 296 p., $3.

SYMPOSIUM ON POWDER METALLURGY—American Society for Testing Materials—*Am. Soc. for Testing Materials,* 55 p., illus., $1., paper. Technical papers and extensive discussion on the subject at the Buffalo Spring Meeting of 1943.

VEGETABLE FATS AND OILS: Their Chemistry, Production, and Utilization for Edible, Medicinal and Technical Purposes — George S. Jamieson—*Reinhold,* 508 p., $6.75, 2nd. ed., Monograph Series No. 58.

NUTRITION

# Anti-Scorbutic Pine

➤ CHINESE soldiers threatened with scurvy due to their limited rations might take a hint from the Russians. Soviet scientists found that needles of ordinary pine trees contain vitamin C, and during the long siege of Leningrad a tea made from pine needles played an important role in preventing scurvy.

A tasty drink can be brewed with needles collected from ordinary pine trees or from any of the other conifers. Even hemlock needles can be used, for the deadly hemlock that Socrates drank was not made from an evergreen, but from a variety of wild parsnip.

Boiling water may be poured over the crushed needles and let stand until the tea has a distinct aroma of pine. A more interesting drink could be made by letting the needles, cones or even green bark of the tree ferment in wine or beer.

Although the needles do not contain a large amount of the vitamin so important in preventing scurvy, repeated use of one of these drinks would help make up for a threatened deficiency.

The finding of another source of vitamin C by the Russians, reported in *Science,* is new from a biochemical angle. Actually, however, tea from pine needles has been used to combat scurvy on a number of occasions in the past.

Even bears seem to know that evergreen needles are helpful. Black bears have been observed stuffing themselves with the rough "greens" when they emerge from hibernation, gaunt and haggard, in early spring. (*See SNL,* Aug. 21)

*Science News Letter, November 27, 1943*